

The Claims

What is claimed is:

- 1 1. An antenna apparatus comprising:
2 an antenna feed line having first and second conductors;
3 a driver section comprising a pair of cones, each of said cones having an apex region, said
4 cones arranged so that said apex regions are spaced apart and are adjacent and in which one of
5 said cones is connected to said first conductor and a second of said cones is connected to said
6 second conductor; and
7 a beam shaper section including a beam shaper element having a beam shaper surface of a
8 shape chosen to provide selected antenna operating characteristics and a conforming surface that
9 is disposed in substantial conformity with a crotch defined between said two cones.
- 1 2. The apparatus of claim 1 wherein said cones are reflectively opposing, substantially
2 identical, cones.
- 1 3. The apparatus of claim 1 wherein said cones are asymmetric.
- 1 4. The apparatus of claim 3 wherein said cones are oblique cones.

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- 1 5. The apparatus of claim 4 wherein said cones are oblique circular cones.
- 1 6. The apparatus of claim 4 wherein said cones are oblique elliptical cones.
- 1 7. The apparatus of claim 1 wherein at least one of said cones has a plurality of slope faces.
- 1 8. The apparatus of claim 7 wherein said cones differ in slope faces.
- 1 9. The apparatus of claim 1 wherein said shape of said beam shaper surface is convex.
- 1 10. The apparatus of claim 9 wherein said shape of said beam shaper surface is substantially
2 spherical.
- 1 11. The apparatus of claim 9 wherein said shape of said beam shaper surface is substantially
2 ellipsoidal.
- 1 12. The apparatus of claim 1 wherein said beam shaper element is a first of first and second
2 beam shaper elements wherein said first beam shaper element substantially surrounds said
3 second beam shaper element, each of said beam shaper elements having different dielectric
4 properties.

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1 13. An antenna apparatus comprising:

2 an antenna feed line having first and second conductors;

3 a driver section comprising a pair of asymmetric cones, each of said cones having an apex
4 region, said cones arranged so that said apex regions are spaced apart and are adjacent and in
5 which one of said cones is connected to said first conductor and a second of said cones is
6 connected to said second conductor; and

7 a beam shaper section including a beam shaper element having a beam shaper surface that
8 is convex and a conforming surface that is disposed in substantial conformity with a crotch
9 defined between said two cones.

1 14. The apparatus of claim 13 wherein said cones are oblique cones.

1 15. The apparatus of claim 14 wherein said cones are oblique circular cones.

1 16. The apparatus of claim 14 wherein said cones are oblique elliptical cones.

1 17. The apparatus of claim 13 wherein said shape of said beam shaper surface is substantially
2 spherical.

1 18. The apparatus of claim 13 wherein said shape of said beam shaper surface is substantially
2 ellipsoidal.

1 19. The antenna apparatus of claim 13 wherein said beam shaper element is of a material
2 comprising a dielectric.

1 20. The antenna apparatus of claim 13 wherein said beam shaper element is a first of first and
2 second beam shaper elements wherein said first beam shaper element substantially surrounds
3 said second beam shaper element, each of said beam shaper elements having different dielectric
4 properties.

1 21. The apparatus of claim 20 wherein said beam shaper surface of said first beam shaper
2 element is substantially convex and further wherein said second beam shaper element has a beam
3 shaper surface that is substantially convex and has a conforming surface that is disposed in
4 substantial conformity with said crotch defined between said two cones.

1 22. The antenna apparatus of claim 20 wherein said first beam shaper element is of foam and
2 said second beam shaper element is of polyethylene.

1 23. An antenna apparatus comprising:
2 a coaxial antenna feed line having first and second conductors;
3 an antenna driver section having a pair of reflectively opposing, substantially identical,
4 asymmetric cones, each of said cones having an apex region, said cones arranged so that said

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5 apex regions are spaced apart and are adjacent and in which one of said cones is connected to
6 said first conductor and a second of said cones is connected to said second conductor; and
7 an antenna beam shaper section including a beam shaper having a beam shaper surface
8 that is substantially convex and a conforming surface that is disposed in substantial conformity
9 with a crotch defined between said two cones.

1 24. The antenna of claim 23 wherein said asymmetric cones are oblique cones.

1 25. The apparatus of claim 23 wherein said shape of said beam shaper surface is substantially
2 spherical.

1 26. The apparatus of claim 25 wherein said cones are oblique circular cones.

1 27. The apparatus of claim 25 wherein said cones are oblique elliptical cones.

1 28. The antenna apparatus of claim 23 wherein said beam shaper element is a first of first and
2 second beam shaper elements wherein said first beam shaper element substantially surrounds
3 said second beam shaper element, each of said beam shaper elements having different dielectric
4 properties.

1 28. The antenna apparatus of claim 27 wherein said first beam shaper is of foam and said

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- 2 second beam shaper is of polyethylene.